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## EUROPEAN PATENT APPLICATION

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54 **Clamping and coupling means.**

57 The invention relates to clamping, coupling and connecting means to be used and with pipes of different materials and also with hose like fluid conduits of plastics, rubber or like materials.

The clamp relates to the kind known as clamp couplings, and are used also, but not exclusively for the repair of metal or synthetic material conduits which have sprung a leak, especially in cases where the immediate and speedy repair is mandatory in order to avoid loss of the respective fluid, be it liquid or gaseous, and the possible environmental damage which might be a consequence of such leak.

In its broadest aspects such means comprise a relatively wide metal band (11) provided with a tightening arrangement (6), the said band being designed to be placed around a pipe or hose (2), such that by means of the unique tightening arrangement could be tightened around the said conduit.

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## FIELD OF INVENTION

The present invention relates to clamping, coupling and connecting means to be used with pipes of different materials and also with hose like fluid conduits of plastics, rubber or like materials.

There are known and exist many types of conduits for fluids, such as water pipes, sewage pipes, gas, oil pipes and others as well as hose like conduits, these latter are composed of pipe or hose sections which are connected to each other by various connecting means.

There are known also in the trade a large number of connecting

and coupling means of different configurations and build. The present invention relates to the kind known as clamp couplings, and are used also, but not exclusively for the repair of metal or synthetic material conduits which have sprung a leak, especially in cases where the immediate and speedy repair is mandatory in order to avoid loss of the respective fluid, be it liquid or gaseous, and the possible environmental damage which might be a consequence of such leak.

In its broadest aspects such means comprise a relatively wide metal band provided with a tightening arrangement, the said band being designed to be placed around a rubber or like band and around a pipe or hose.

The present invention relates to such clamping and coupling means of the type referred to - and more particularly to - the tightening or fastening means thereof.

## OBJECTS OF THE PRESENT INVENTION

It is an object of the invention to provide coupling means for repair of pipes.

It is a further object of the invention to provide a coupling which could be easily fitted on the damaged place and easily tightened around it.

It is yet a further object of the invention to provide such coupling which could also be used for connecting two pipe ends.

## SUMMARY OF INVENTION

According to the invention there is provided a clamp coupling and repairing means which comprises a relatively wide metal band which is bent to form a sleeve like structure, the two free edges of which being extended and bent outwardly over a reinforcement body, said two outwardly extending portions are not parallel to each other and incline towards the edge thereof, a plate or plates member is laid against said extending portion, throughgoing holes being provided in said plates and said outwardly extended portions, screw bolts passed

through said holes and nut screwed on said bolts.

## DESCRIPTION OF DRAWINGS AND PREFERRED EMBODIMENT

The invention will now be described with reference to the annexed drawings in which:

Fig. 1 is a perspective view of the new means, while

Fig. 2 is a cross section thereof,

Fig. 3 is a plan view thereof,

Figs. 4 and 5 illustrate end and plan views without some parts,

Fig. 6 is an end view of an embodiment of the invention, while

Fig. 7 is a further embodiment of the new means.

Turning first to Fig. 1, the clamping and coupling means comprise the metal band 1. In practice, when actually used, the band is placed in a sleeve like manner around the two pipe ends to be connected, preferably with the interposition of a packing 3, or around the conduit which has sprung a leak, at the damaged part thereof, whereupon both free edge portions 1' of the sleeve 1 are extended and bent radially outwardly of the circular space 2 of the sleeve 1.

Extensions 1' are further bent radially enclosing two complementary plates 4 reinforcing said extensions. Extensions 1' are preferably provided with bulge like protrusions 5, in the centre of which there is provided a hole 9 where a plurality of nuts and bolts 6 is provided. The bolts passing through plates 4 and extension 1' and through semi-spherical protrusions 5. A further plate 7 is provided to enable applying pressure on said extension.

By tightening bolts 6, section 1' are drawn together in an obvious manner. Spherical protrusions 5 enable said nuts and bolts to remain parallel to each other, whether said means are in an "open" position or "closed" position.

As can be seen, the two extension portions 1' are not parallel to each other but incline such that by tightening bolts 6 the free edge of said extension engages each other acting as an axis which enables the tightening properly. In order to place the new means over a given pipe slots 8 are provided in extension 1' which enables the insertion of said extension without removing bolt 6.

Fig. 6 illustrates an embodiment of the means according to the invention where instead of the spheric bulge 5 extensions 1' are bent in a wavy line forming a continuous longitudinal convex bulge, while the free edges are adapted to engage when bolt 6 is tightened.

Fig. 7 illustrates a further embodiment of the invention. Likewise sleeve 1 is provided with free edge portions 1', however these being extended

and bent around a rigid body 10. Bolts 6 pass through bores 10' and through semi spherical pressure plate 7. One side of extension 1' is provided with a slot 8 which enables the placing or releasing of the sleeve without removing bolt 6 only by passing said slot 8.

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By tightening bolt 6 sections 1' are drawn together in an obvious manner. Semi spherical pressure plates 7 enable said nut to remain in the same position. By the tightening of the extreme edges 1" of extension 1' it establishes contact and acts as an axis.

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As can be seen from the description, the new coupling means according to the invention are unique in their construction by providing an axis or pivoting point which enables the tightening of the coupling means and which acts as counter point.

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### Claims

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1. A clamp coupling and repairing means for fluid conducting pipe- and hose conduits comprising a relatively wide metal band (in relation to the diameter of the respective conduit), such band being bent to form a circular, sleeve like structure, the two free edges of which being extended and bent radially outwardly over a reinforcement body, throughgoing holes being provided in the said outwardly extended edge portions, a screw bolt passed through the said holes and nuts screwed on said bolts pressing the said extended portions against one another, so spanning fast the said sleeve around the respective conduit.

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2. The means claimed in claim 1, characterised thereby that said two extended portions are not parallel to each other, the free edges act as turning axis or counter point.

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3. The means claimed in claims 1 and 2, characterised by the position of two plate members laid against the two extending portions.

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4. The means as claimed in claim 1, characterised by the extension portions which enclose a rigid material body provided with through-going bore.

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5. The means as claimed in claim 4, characterised by a semi spherical plate placed over said extensions.

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6. The means as claimed in claims 4 and 5, where a slot is provided in one of the extensions to facilitate the placing and releasing of said sleeve.

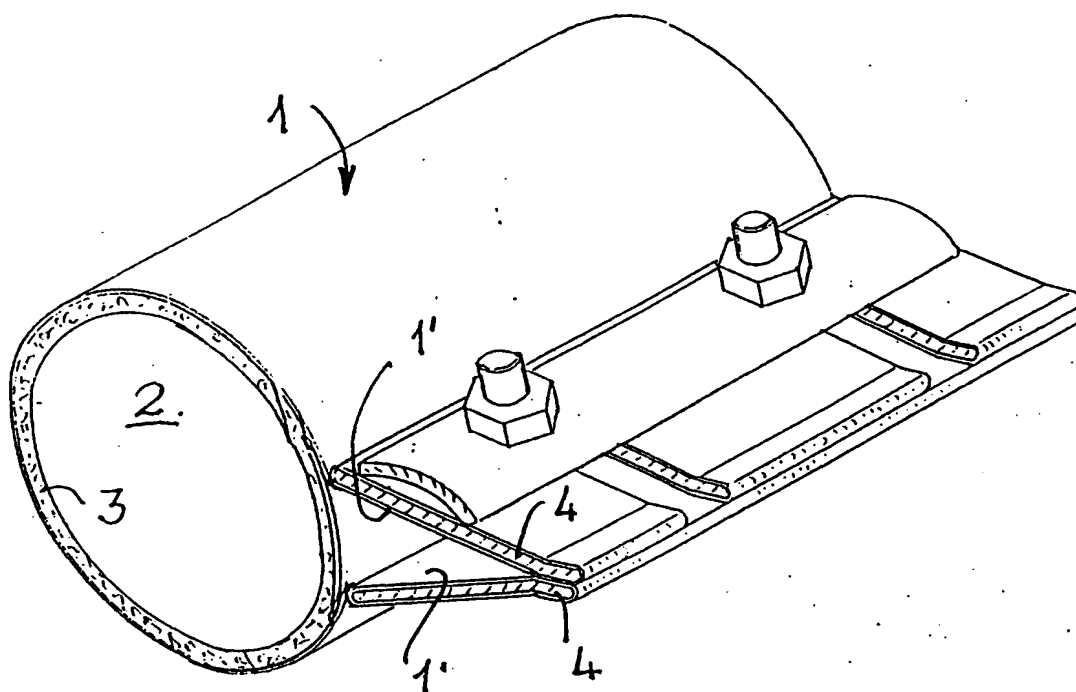
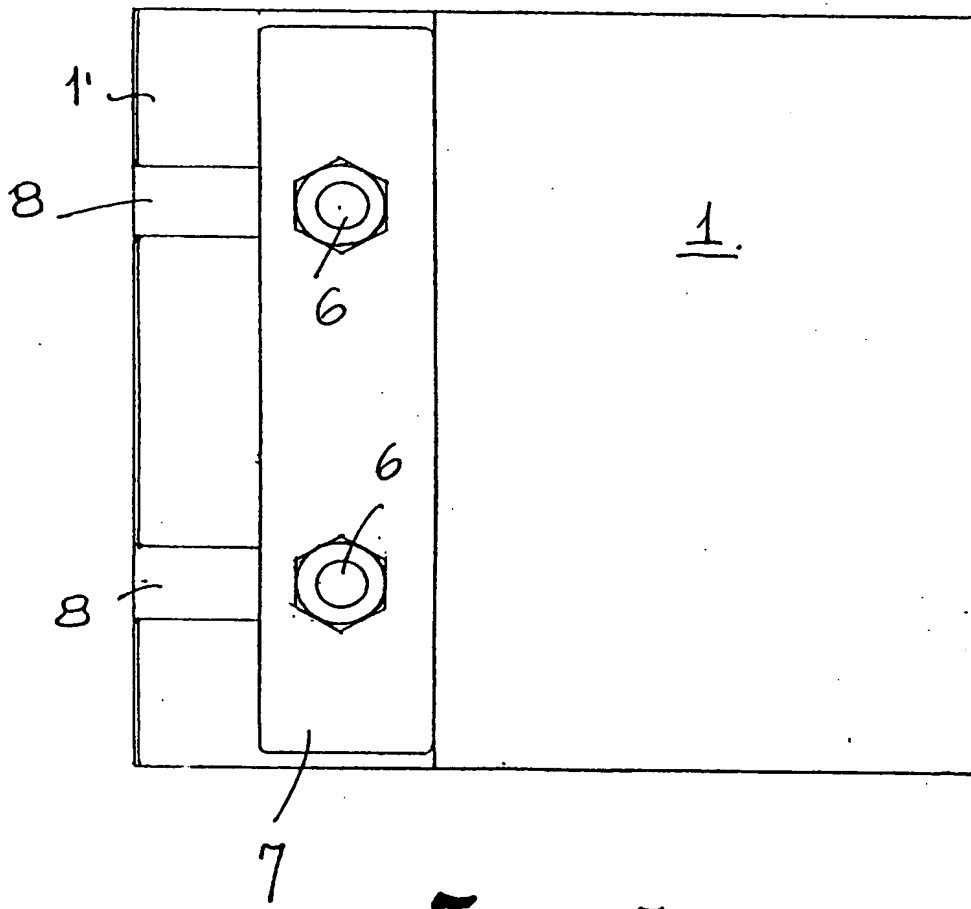
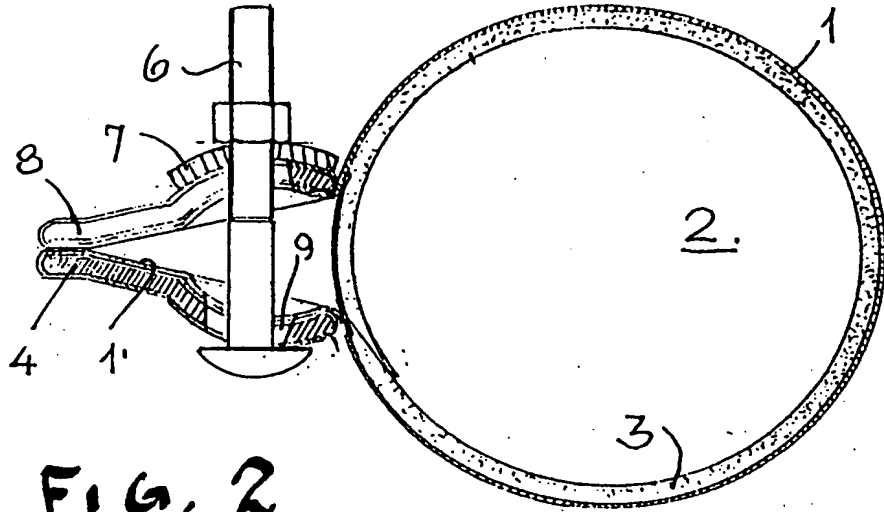


FIG. 1



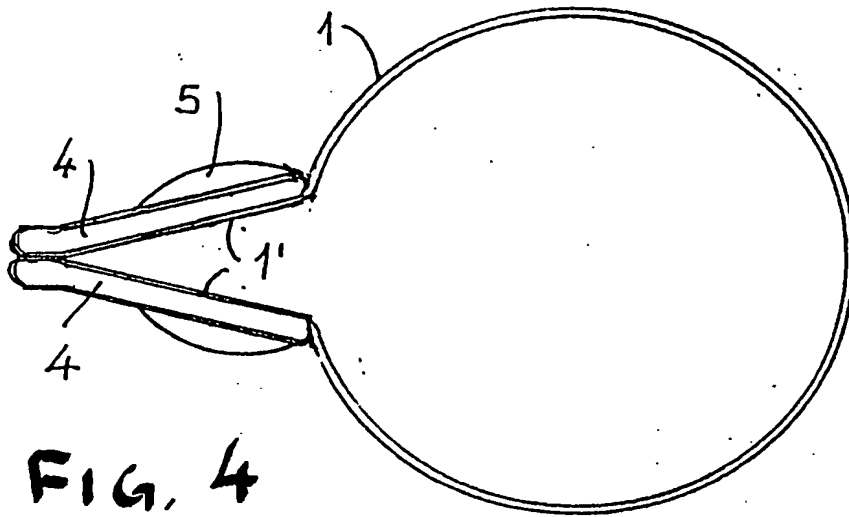


FIG. 4

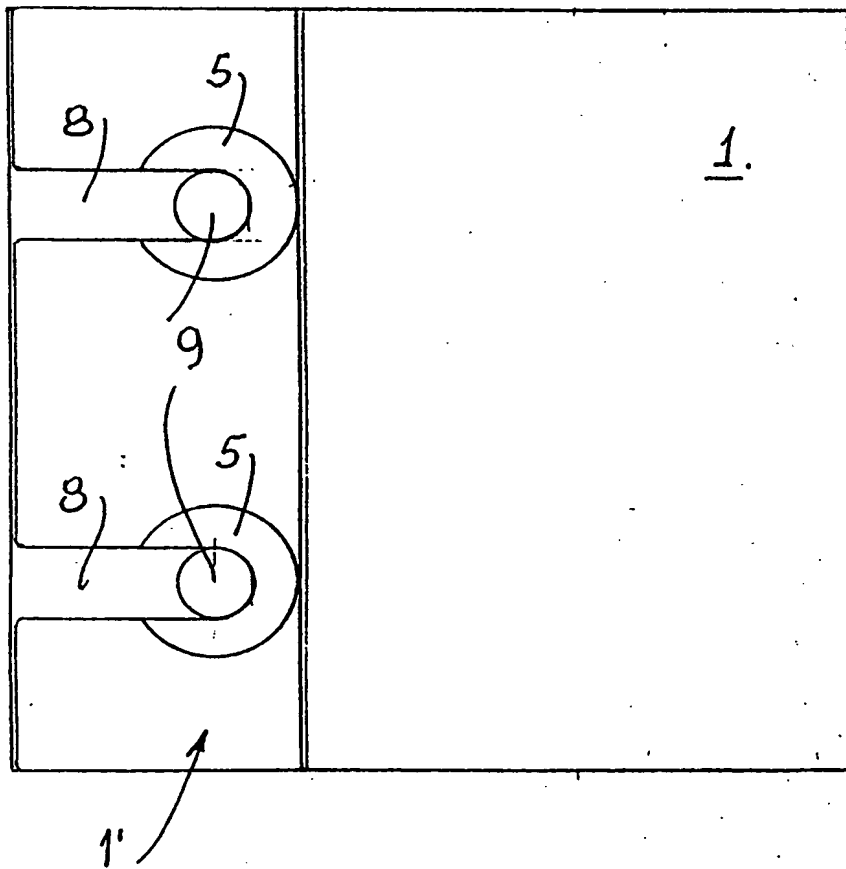


FIG. 5

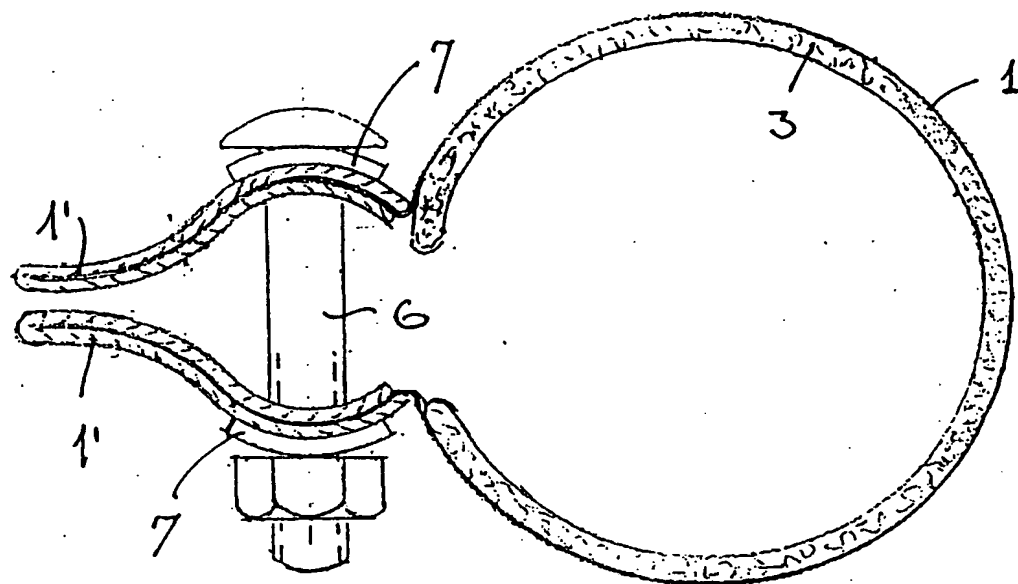


FIG. 6

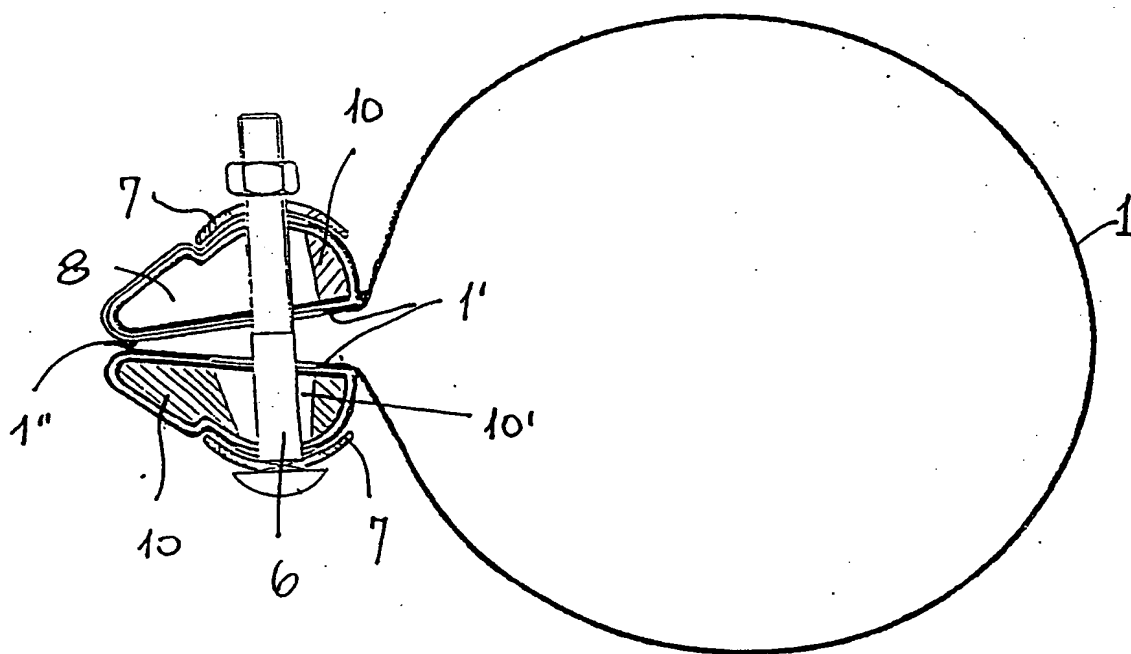


FIG. 7



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## EUROPEAN SEARCH REPORT

Application Number  
EP 93 11 3482

### DOCUMENTS CONSIDERED TO BE RELEVANT

| DOCUMENTS CONSIDERED TO BE RELEVANT   |   |  |  |
|---|---|--|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim                                    | CLASSIFICATION OF THE APPLICATION (Int. CL5) |
| X   | US-A-4 365 393 (HAUFFE ET AL.)<br>* abstract; figures 1-7 *<br>---            | 1,4  | F16L55/172<br>F16L21/06<br>F16L33/04         |
| X   | DE-C-40 27 032 (RASMUSSEN GMBH)<br>* abstract; figures 1-5 *                  | 1,4  |  |
| A   | ---   | 3  |  |
| X   | US-A-4 463 975 (MCCORD)<br>* abstract; figures 1-5 *                          | 1,2,4  |  |
| A   | ---   | 3  |  |
| A   | GB-A-926 668 (AEROQUIP AG)<br>* figures 1-7 *                                 | 1,2,6  |  |
| A   | US-A-3 905 623 (CASSEL)<br>* figures 4,5 *                                    | 1  |  |
| A   | GB-A-104 484 (ELLIOTT ET AL.)<br>* page 2, line 4-7; figures 1-3 *<br>-----   | 1,5  | TECHNICAL FIELDS SEARCHED (Int. Cl.5)        |
|   |   |  | F16L   |
| The present search report has been drawn up for all claims  |   |  |  |
| Place of search<br>THE HAGUE  |   | Date of completion of the search<br>22 November 1993 | Examiner<br>ANGIUS, P                        |
| CATEGORY OF CITED DOCUMENTS   |   |  |  |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document   |   |  |  |
| T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>-----<br>& : member of the same patent family, corresponding document |   |  |  |